

**PET5J003 POWER ELECTRONICS****MODULE-I****1. Power electronics devices:**

Characteristics of power devices – characteristics of SCR, diac, triac, SCS, GTO, PUJT, power transistors – power FETs – LASCR – two transistor model of SCR – Protection of thyristors against over voltage – over current,  $dv/dt$  and  $di/dt$ .

**2. Triggering techniques:**

Turn on circuits for SCR – triggering with single pulse and train of pulses synchronizing with supply – triggering with microprocessor – forced commutation – different techniques – series and parallel operations of SCRs.

**MODULE-II****3. Controlled rectifiers:**

Converters – single phase – three phase – half controlled and fully controlled rectifiers – Waveforms of load voltage and line current under constant load current – effect of transformer leakage inductance – dual converter

**MODULE-III****4. Inverters:**

Voltage and current source inverters, resonant, Series inverter, PWM inverter. AC and DC choppers – DC to DC converters – Buck, boost and buck – boost.

**MODULE-IV****5. Industrial applications**

DC motor drives – Induction and synchronous motor drives – switched reluctance and brushless motor drives.

**Additional Module (Terminal Examination-Internal)**

6. Battery charger – SMPS – UPS – induction and dielectric heating.

**Text Books**

1. Power Electronics Circuits, Devices and Applications, M Rashid, PHI, 3<sup>rd</sup> Edition. 2004.
2. Power Electronics, M.D. Singh and K.B. Khanchandani, TMH, 2<sup>nd</sup> Edition, 2007.

**Reference Books**

1. Power Electronics, P C Sen, TMH, 1987.
2. Thyristorised Power Controllers, G K Dubey, Wiley Eastern 1986.
3. Power Electronics – Principles and Applications, J Vithayathil, McGraw-Hill, 1995.
4. Power Electronics, V.R. Moorthy, Oxford University Press, 2005